



# CANYONS & CAVES

A Newsletter from the Resources Stewardship & Science Division

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The Klansman in Slaughter Canyon Cave lit up during a recent filming project. (NPS Photo by Dale Pate)

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## RESOURCE NEWS

**EARTHQUAKE** – The local area was gently shaken with a magnitude 4.0 earthquake at 3:22am on Sunday, May 23. The epicenter was located about 25 miles north-northwest of Carlsbad Cavern.

**NATIVE GRASSES** – Even though the April rains caused our summer grasses to green up and bloom early this year, that doesn't mean they're actually producing seeds. Biology staff learned a lot about native grasses and seed collection during a

recent visit from Greg Fenchel of the Natural Resources Conservation Service's Los Lunas Plant Materials Center. Fenchel demonstrated how to find evidence of the tiny seeds in all those dried-out flower heads. He showed that the 'cool-season' grasses that are designed to bloom in spring were able to produce seeds this year, but many of the 'warm-season' grasses, like blue grama and sideoats grama, have flowered without the seeds developing. Fenchel said that timely summer rains could trigger flowering again in these grasses, and that very night a thunderstorm dropped rain on Eddy County. The seeds that have been collected since 2003 will be used for revegetation when much of the pavement in the Bat Cave Draw parking lot is removed, and for the roadsides in Walnut Canyon after the road rehab project. Stay tuned for more seed news.

**TWO NEW CAVES** – Two new caves have been documented recently to bring the total number of caves in the park to 109.

**WORKING WITH THE DISCOVERY CHANNEL** – Park personnel have recently been working with a Discovery Channel film crew to produce a documentary on caves of the National Park Service. Caves of Carlsbad Caverns, Mammoth Cave, and Hawaii Volcanoes National Parks will be highlighted.



The Discovery Channel crew preparing to shoot a scene at the Christmas Tree in Slaughter Canyon Cave (SCC).



Seeing what the cameraman sees at the Giant Mushroom in SCC.

**WELCOME TO CHRIS NEWSOM**, a New Mexico State University student who is working here this summer on the final year of the herpetological inventory. Chris is documenting amphibians and reptiles under a cooperative agreement between NMSU and CCNP.

**LIGHTNING STRIKE** – Lightning can strike at unexpected moments and places as evidenced on the afternoon of Thursday, June 24. Standing outside the Cave Resources Office, Paul Burger witnessed a bolt of lightning hitting the pavement in the driveway about 30 feet in front of where he was standing.



X marks the spot where lightning hit on the afternoon of June 24.



One of the holes that the lightning strike created in the pavement.

**BIRDING HAS BECOME \$32 BILLION-A-YEAR BUSINESS** these days. Birders in the United States spent that much in 2001 on equipment and travel – travel to birding “hot spots” like our very own Rattlesnake Springs, which has seen growing visitation by birders from all over the world. Designated as an Important Bird Area by the American Bird Conservancy and National Audubon Society, Rattlesnake Springs bird sightings have included more than 60 percent of all bird species in New Mexico. It provides important habitat for resident, nesting, and migrating birds, as well as a diversity of other wildlife.

**CAVE RESOURCE ASSESSMENT ON THE SHASTA-TRINITY NATIONAL FOREST, CALIFORNIA** – Kelly Fuhrmann and Paul Burger from the Resource Science and

Stewardship Division conducted a cave resource assessment for the U.S. Forest Service on the Shasta Trinity National Forest in northern California June 14-18. This ongoing project is part of a cooperative agreement set up between the USFS and the NPS for cave resource inventory purposes by Kelly while he was working at Lava Beds National Monument. This agreement provides a link between the two agencies and a unique working relationship focused on the sole purpose of gathering cave resource information to be used for the protection and preservation of caves on National Forest lands. The agreement provides NPS cave resource specialist services to the USFS for the purpose of assessing lava tube and solution cave resources on four national forests in northern California.

The initial plan for the week was to do a cave resource assessment in a recently discovered solution cave. Upon arriving at the cave, a large maternal colony of Townsend's big-eared bats, a State of California and Federal species of special concern, was found near the entrance. The presence of the maternal colony forced the U.S. Forest Service to cancel the trip into the cave and reschedule the assessment for later in the summer. Once completed, the information gathered from this assessment will be used for establishing a Research Natural Area in the Shasta-Trinity National Forest for future scientific research.

Paul and Kelly were able save the trip and redirected the week's efforts on surveying and inventorying a couple of lava tubes and a volcanic feature on the south side of the Medicine Lake Volcano, the largest shield volcano in the Cascade Range, covering over 900 square miles. The resource information gathered from this project is used by USFS officials for making cave resource management decisions and provides insight for other resource planning projects.

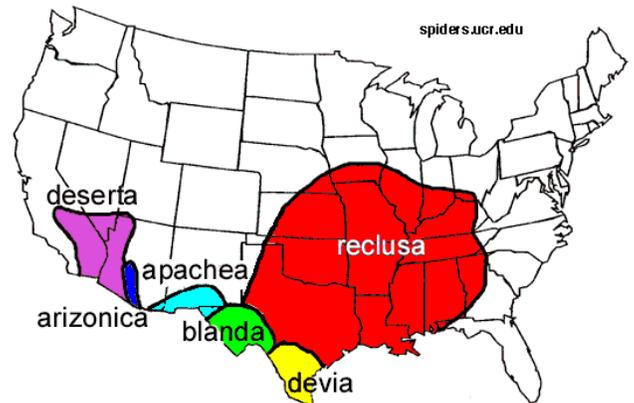
## PITY THE BROWN RECLUSE

by Renée West

Pity the poor brown recluse spider. It's true that this spider carries a toxin and its bite can occasionally cause a nasty skin condition that may take months to heal. But human bites are rare. And they certainly don't usually happen in places where the brown recluse doesn't even live. This shy spider has been falsely accused in multitudes of cases far and wide across the country. Many "brown recluse" bites are reported without a spider having been seen, and even outside the known range where brown recluses occur.

The brown recluse only lives in the southern Midwest and south-central portion of the country. But there are so many brown spiders (and even non-spiders!) that are suspected of being brown recluses that one arachnologist had issued a "Show me the Spider" brown recluse spider challenge<sup>1</sup>. Rick Vetter at the University of California Riverside challenges people from California (and elsewhere outside the range of the brown recluse) to send him their suspected brown recluses. New Mexico is just west of the known range for the brown recluse spider, *Loxosceles reclusa*. "Technically, it is not impossible to find the brown recluse along the eastern border

of NM near the Texas panhandle," where a few rare specimens have been verified, said Vetter (personal communication). "However, it is not known to extend much further west."



Range of recluse (genus *Loxosceles*) spiders in the United States

A map of the known ranges of some of the recluse spider species (*Loxosceles* spp.) in North America, from the University of California Riverside website (<http://spiders.ucr.edu>).

Vetter recently identified two specimens sent from Carlsbad Caverns National Park as *Loxosceles apachea*, the Apache recluse spider. There are other recluse species in west and south Texas and around Arizona, but this is the main species in southeast New Mexico. This spider has not been well studied, and it's not known how venomous it is compared to its brown recluse cousin.

The good news is that all the spiders in the *Loxosceles* genus are as reclusive as their name suggests—meaning that you're not very likely to get bitten even when they are present. They are not aggressive. Like the more common black widows, they are nocturnal and hide themselves well during the day in their sticky webs. Unlike the widows, recluses do not hunt with their webs but only use them for resting at night. Recluses actively hunt at night by walking around seeking insects to eat. They attack insects and subdue them with venom.

Recluses are termed "synanthropic," which means that they benefit from being around people.<sup>2</sup> That's because people create good habitat for them. Outdoors, they live under rocks and in crevices. Indoors, they favor dark, quiet, undisturbed areas, like messy closets that don't get tidied up very often... or behind picture frames. One of the CCNP specimens sent to Vetter had crawled out from behind a wooden calendar frame in the Biology offices early in June, just after the calendar was turned. This activity apparently disturbed the spider from its hideout. In South America, one of the names for the recluse species is "the spider behind the picture."<sup>3</sup>

In the deserts, we get used to living with biting, stinging, and venomous wildlife of many kinds. As always, there are precautions that will help you avoid being bitten by a recluse spider. And good advice to follow if you are, chiefly "Don't panic." You can find good advice at the websites below, or call the Biology office (x3099).

So don't automatically believe it if anyone blames the brown

recluse for biting someone in New Mexico. It's extremely unlikely. And don't panic about the Apache recluses we do have. We can all take heart from the words of one father of young children who lives in brown recluse territory in Alabama: "...we, (and all my neighbors), live with these creepy little critters in our home, every day, and ain't nobody getting bitten, attacked, or dying a horrible agonizing death around here."<sup>1</sup>

## References

<sup>1</sup>University of California Riverside website:  
<http://spiders.ucr.edu>

<sup>2</sup>Vetter, Rick. Identifying and Misidentifying the Brown Recluse Spider. *Dermatology Online Journal* 5(2):7, available at:  
<http://dermatology.cdlib.org/DOJvol5num2/special/recluse.html>

<sup>3</sup>University of California Davis website:  
<http://www.ipm.ucdavis.edu/PMG/PESTNOTES>

## THE IMPORTANCE OF RAY V. DAVIS IN EARLY CAVERNS HISTORY *by Bob Hoff*

I would speculate that almost everyone who knows about the early history of Carlsbad Caverns knows about the importance of explorer and guide Jim White. For some people, including myself, White's contributions were so large and long-lasting that he is "Mr. Carlsbad Caverns."

I would also speculate that another important contributor to the early caverns history, photographer Ray V. Davis, is virtually unknown to many people. In their book *Carlsbad Caverns: The Early Years—A Photographic History of the Cave and Its People*, William Halliday and Robert Nymeyer include a chapter entitled, "The Story of George Adams and Ray V. Davis, Photographers," richly illustrated with some of Davis' photographs. Browse this book and feast your eyes on these photographs.

Let us turn our attention to Ray V. Davis.

In 1913, nineteen-year-old Ray Vesta Davis was traveling to California from Kansas with his parents Martin and Nevada Davis and the rest of his family. While stopped in Clovis, New Mexico in northeastern New Mexico, the Davis family chanced to hear some land "boosters" from Eddy County in southeastern New Mexico. The boosters promoted the virtues of settling down in this area of the Pecos River Valley, claiming that Carlsbad might be a better place to continue farming than in California, especially with the massive irrigation and reclamation projects underway in the Pecos Valley. The Davis family agreed and came to Carlsbad to settle.

For young Ray Davis, his interest in farming quickly sputtered out after arriving in Carlsbad, replaced by a burning desire to be a photographer. Shortly after moving to Carlsbad, he opened a photographic studio named the "Picture Gallery." In later years, he recalled that his first camera was a small box Kodak made by Eastman. He also recalled that the camera



In the Big Room. (Photo by Ray V. Davis)

began his seventy year love affair with photography (Halliday and Nymeyer, 1991, p. 57.)

In 1915, explorer and guide Jim White was 33 years old, with nearly two decades under his belt of exploring and guiding others in what was then called “Bat Cave.” The underground wonders that White and his companions had seen defied description. White was stymied in his effort to promote awareness of the cavern to those who refused to believe what they hadn’t seen with their own eyes. Imagine yourself trying to put the caverns into words for others before it became known to the world through publicity.

Sometime around 1915-1918, the paths of Jim White and Ray V. Davis crossed and Jim invited Ray to the caverns to take pictures. Davis, twelve years junior in age to White, fell in love with the cavern just as White had himself years before. Almost immediately, Davis, like White, also realized the need to make known the caverns in order to share it with others.

With White guiding Davis in the caverns and Davis taking photographs, the key combination for bringing the caverns to the attention of the world began, starting the changes that would evolve the “Bat Cave” as an early 20<sup>th</sup> century bat guano mining site into a National Monument in 1923, a National Park in 1930, and a World Heritage Site in 1995.

Just how important were Ray V. Davis’s photographs to the future of Carlsbad Caverns? Consider:

- His pictures began attracting local interest in the early 1920s. He even organized an expedition of prominent city people to explore the cavern in 1922
- Some of his earliest photographs Davis turned over to the New Mexico Land Office; copies of these photos ended up in the possession of the U.S. General Land Office who shared their interest with the National Park Service in Washington D.C. in March 1923
- The National Park Service responded by asking the GLO to send an exploration expedition to the caverns. In April 1923, an expedition from Roswell, New Mexico, headed by GLO Mineral Examiner Robert Holley arrived on the scene. Holley estimated several days for the exploration; instead it took five weeks and was guided by Jim White and photographed by Ray Davis. In his report, Holley urged that the caverns be established as a national monument
- After U.S. Geological Survey geologist Willis T. Lee visited for two weeks in August later that summer, he rushed back to Washington D.C. to urge what Holley had recommended: establishment of the caverns as a national monument. When Lee led a six-month expedition of day trips here from March – Sept 1924, he used Davis’ pictures to illustrate his first article for the *National Geographic* magazine

In March 2004, I did an oral history interview with two of Ray

Davis’ nephews, Roger and Noel Davis—and Noel’s wife, Mary Ann Hartwell Davis. I plan to do a future article on Ray V. Davis, sharing some of his relatives’ memories, as well as other stories about him.



The fallen giant. (Photo by Ray V. Davis)

Not only was Ray V. Davis important to the caverns history and what the caverns developed into, but in addition, he was a very interesting person.

## THE BARBARY “SHEEP”: NOT A SHEEP OR A GOAT?!

by Kelly Fuhrmann

The science geeks in the Biology office have been doing some researching... again. These nerds have discovered that our very own Barbary sheep have no business calling themselves sheep. So what’s the big deal, you ask? They look like sheep with their fancy-shmancy horns, but are built more like a goat without the telltale chinbeard male goats have. Barbary sheep behave like sheep, climbing around on the steep canyon cliffs strutting their stuff. These bold exotic animals even had the nerve to take over their relatives’ territory, the desert bighorn sheep (*Ovis canadensis mexicana*), after the bighorns were extirpated by, guess who, *Homo sapiens sapiens* (our crowd). Yes, it’s true, and you heard it here second or third, the Barbary is no sheep and it’s no goat either! The fact of the matter is that the name Barbary “sheep” is a misnomer.

So let’s take a closer look at this so-called sheep. I’m sure you read the story by Donna Laing in the Winter 2003 issue, No. 31, of *Canyons and Caves* of how the Barbary arrived here at Carlsbad Caverns National Park by 1959. As opportunistic transplants will do, they made themselves right at home here in the Guadalupe Mountains after sneaking away from a game ranch in central New Mexico in 1943. Well now, let’s get the rest of the story about this “sheep” out in the open.

If you are not already, you better sit down for this part. Hang in there with me through some anatomy, serology, and genetics talk for a few sentences. From an anatomical perspective, the genus of the Barbary, called *Ammotragus*, which means “sand goat” (referring to the color), lacks the

glands (i.e., ingunal, preorbital, and pedal glands, having to do with hormone and scent stuff) that characterize all true sheep. In fact, anatomically speaking, it more closely resembles goats. From a genetic perspective, its numbers of chromosomes differ from both goats and sheep, and, to top it all off, here's the clincher, serological (blood protein) research has determined the amino acid sequencing of the Barbary is different from both sheep and goats.

So there you have it! Right? You got it, right? They're not goats or sheep! I know, I know, this all a shock to you. So where does that leave us, besides confused? Well, let's move on to taxonomy for some *real* clarification.

The taxonomic breakdown of the Barbary "sheep" outlined below sheds some light on the relationship of the Barbary (AKA, aoudad) to its relatives, the goats and sheep:

Taxonomic Classification of the aoudad (Valdez & Bunch 1979)

Class: Mammalia  
Order: Artiodactyla (even toed ungulates or hoofed animals)  
Suborder: Ruminantia (cud-chewers)  
Family: Bovidae (sheep, goats, cattle antelopes and relatives)  
Subfamily: Caprinae (sheep, goats, serow, Rocky Mountain goat, muskox, **aoudad**, bharal, tahrs)  
Tribe: Caprini (**aoudad**, bharal, tahr, goats, sheep)  
Genus: *Ammotragus*  
Species: *A. lervia*

You see, way back in the family tree of the Barbary, an ancestor that was closely related to the Barbary somehow managed to tweak the family genes enough to split off another branch on the tree and give rise to both sheep and goats. This caused the three to diverge in slightly different directions on the *Caprinae* subfamily tree, the sheep and goats continued off in their evolutionary directions and the Barbary (aoudad) continued on its happy evolutionary trail, eventually ending up at Carlsbad Caverns. The good news is that when the eventual reintroduction of native desert bighorn happens, after the park has a handle on the Barbary population, there won't be any worries about any eventual "Barbary bighorn" babies being born in the park because the truth is that they're really just genetically incompatible.

So, after all that genetics, taxonomy, and anatomy stuff is said and done, quite simply, it is more accurate to refer to the Barbary sheep as just a Barbary (referring to the Barbary Mountains of North Africa where the animal originally called home), or aoudad, the native Arabic name for the animal. Got it? So the next time you are hiking the trail up to Slaughter Canyon Cave or are hanging out in the parking lot at the trail head and see one of those sheep/goat-like animals strutting its stuff up on the cliffs above you, and a visitor exclaims, "There's a bighorn sheep!" you will confidently reply, "Actually, that is not a bighorn, it's a distant relative of the bighorn from Africa, which is not a sheep at all...". Then you can whip out your taxonomic outline and give them the facts. The geeks in the biology office will be proud!

## REFERENCES

- Laing, D. 2003. Barbary sheep and Carlsbad Caverns National Park. Canyons and Caves Newsletter. Issue No. 31, Winter 2003. Pages 3-6.
- Mungall, E.C. and W.J. Sheffield. 1994. Exotics on the Range: The Texas Example. Texas A&M University Press, College Station, TX. Pages 32-39.
- Valdez, R. and T.D. Bunch. 1980. Systematics of the Aoudad. Proceedings of the Symposium on Ecology and Management of Barbary Sheep. Department of Range and Wildlife Management, Texas Tech University, Lubbock, TX.

## CAVE SWALLOWS AND THE YELLOW SALSIFY

by *Renée West*

For much of May and June, cave swallows have been putting on quite a show in the Mission 66 office area. It took me a while to notice, out there in the corner of my eye. But once I was aware, I've had a hard time not watching.



Cave swallows collect fluff from the fruits of yellow salsify plants in the park's developed area. (NPS photo by Donna Laing.)

Cave swallows (*Petrochelidon fulva*, formerly *Hirundo fulva*) have been swooping down to the weeds outside the office and collecting the soft fibers of the yellow salsify, a dandelion-like plant. It's a good guess that these feathery 'seed parachutes' are going into the mud nests in the Cavern to make soft beds for the parents, eggs, and young.

We're accustomed to seeing large groups of cave swallows swirling over us all day as they hunt for food (insects) and nesting materials. But to see them swoop at, hover over, grab, and carry off the fluff of the seed heads is a rare treat. The acrobatics are impressive, especially when captured in photos.

The object of their attention, yellow salsify (*Tragopogon dubius*), is an attractive and interesting plant, but it is not a native. While not a particularly aggressive weed, it is a Eurasian plant that survives in disturbed and compacted ground in the American West.

The salsify has a long list of interesting names, including goat's beard (which is what the genus name *Tragopogon* means), Joseph's flower (because Joseph had a beard), star of Jerusalem, and noonflower or go-to-bed-at-noon, because the flowers close at midday. It's even been called oyster plant, because it is cultivated by some for its edible fleshy roots, which are said to taste a bit like oysters.



The yellow salsify is a lovely, if non-native, plant. Photo borrowed from: [www.weedalert.com](http://www.weedalert.com)

This plant appears to be part of the ongoing suite of human-caused environmental changes in this area. Many of these changes may be responsible for the large colony of cave swallows being here at all. Cave swallows were probably in remote caves in the Guadalupe Mountains in small numbers since before Vernon Bailey saw them in 1924. But the nesting colony in Carlsbad Cavern itself really started in 1966 (West 1991). The colony has grown to a population in the thousands since then. West hypothesized that the colony grew so large mostly due to the park and nearby developments inadvertently providing extra water. There was more surface water available in the housing area (especially back when the park was watering grass lawns), White's City, and the sewage ponds. "This provides them with added sources of water, insects that are attracted to the water, and mud for the nests," according to West (1991). "No other cave swallow nesting site in the Guadalupe Mountains has this combination of benefits."

Now there are nice, soft, non-native plants among those human-caused changes. You might say that the swallows are helping to spread non-native plant seeds, but this plant is already well adapted for wind dispersal with its fluffy 'parachutes' – just like its close relative the dandelion.

There are a few native plants with fluffy stuff to carry their seeds. But the salsify has the longest piece of fluff, so who can blame the swallows for choosing it? Cave swallows seem to be among several of those flexible species that are capable of adapting to and making use of changes in their environment. They are certainly not the only adaptable natives: great-tailed grackles, house finches, and white-winged doves all thrive in

city habitats in the Southwest. Turkey vultures take advantage of the growing number of communication towers for communal night roosting. In the Sacramento Mountains, I have even seen native downy woodpeckers working for insects on stalks of non-native woolly mullein plants.



The fluff of a salsify fruit is the little 'parachute' that helps with wind dispersal of seeds. Photo borrowed from: [www.oardc.ohio-state.edu/weedguide](http://www.oardc.ohio-state.edu/weedguide)

## REFERENCES

West, Steve. 1991. Behavior, status and ecology of the cave swallow (*Hirundo fulva*). Master's thesis, New Mexico Institute of Mining and Technology, Socorro.

Websites on weeds, including salsify:

Virginia Tech: [www.ppws.vt.edu/weed\\_id](http://www.ppws.vt.edu/weed_id)

Ohio State: [www.oardc.ohio-state.edu/weedguide](http://www.oardc.ohio-state.edu/weedguide)

Weed Alert: [www.weedalert.com](http://www.weedalert.com)

## THE UPS AND DOWNS OF FOLIA

by Stan Allison

Folia are speleothems that occur on ceilings and overhanging walls and are typically thin, wavy, undulating fins of calcite resembling very thin inverted rimstone dams. Folia are typically formed of calcite but examples of folia made of mud, halite and even sulfur have been documented in several caves around the world but not within caves of the Guadalupe Mountains. Folia are typically found near the deeper sections of Carlsbad Cavern and Lechuguilla Cave. They are often associated with stranded calcite rafts, mammillaries and other speleothems that form at or below a water level.

The most commonly accepted explanation for the formation of folia relates to the fact that they are typically found near present or past fluctuating water tables. First calcite forms a scum on a water surface. Then a slight rise in the water surface brings the calcite scum on the water in contact with the cave ceiling or overhanging wall. The calcite adheres to the ceiling making a ridge in a ring at the same elevation almost like the calcite/scum rings found in bathtubs. Finally the water level lowers and supplies calcite to the lower edge of the forming

folia. It is at this point in the formation process that the folia forms its typically sub-horizontal bottom edge. As a water table fluctuates up and down these steps can be repeated numerous times contributing to the overall growth of the folia. It is currently unknown as to whether or not folia form in perched pools or only near the surface of a water table.



A portion of the folia found at Lake of the White Roses in Lechuguilla Cave. Photo is taken looking up at the ceiling. (NPS Photo by Larry McLaughlin)

Lechuguilla Cave has two deep areas that are thought to be located at the water table. Both of these locations have extensive folia. Sulfur Shores was discovered in May of 1988 and was the deepest point in the cave at that time. Lake of the White Roses was discovered December 24, 1989 and is the known deep point of Lechuguilla Cave at -1,604.2 feet deep. Lake of the White Roses was named for the extensive folia deposits that occur there resembling delicate white roses. The water level at Lake of the White Roses has dropped considerably since its discovery. A May 7, 2003 trip documented that the water table had dropped 15.7 feet in the 13.5 years since its discovery. The May 7 trip was made by park staff to install a data logger to monitor the water level and temperature of the water table at Lake of the White Roses. A trip to maintain the data logger and download the data is planned for later on this summer. It will be interesting to see if the water table is steadily dropping or slightly fluctuating up and down as it trends overall in a downward direction supporting the fluctuating water table theory of folia formation. It is interesting to note that the folia in the Lake of the White Roses area cover a vertical range of approximately 100 feet. On April 8, 1992 cave diver, Peter Bolt dove Lake of the White Roses down to -92 feet (below the 1992 water level) where the passage became too tight to continue. Approximately 20 feet below the surface of the water, Peter noticed that the folia slowly faded away until the walls were no longer covered with folia.

As with many speleothems, the formation of folia is still not fully understood. Different compositions, sizes and shapes of folia and variations in the cave environments that they form in add to the complexity of determining exactly how folia formed. This article presents a simplistic version of the most commonly accepted theory of folia formation at this point in the ongoing study of folia. Information for this article was taken from Cave Minerals of the World Second Edition by

Carol Hill and Paolo Forti, various Lechuguilla Cave Trip Reports, and a verbal discussion with Art and Peg Palmer.

## QUESTIONS ABOUT THE WEATHER?

by Kelly Fuhrmann

Did you ever wonder what the hottest month at Carlsbad Caverns National Park is, or what the average annual precipitation is for the park? Have you ever had a visitor ask you how much rain the park received last year, or for that matter for the past 5 years? Did you know? Did you guess? Maybe you gave an educated guess for an answer using information from the surrounding region. You don't have to guess anymore! For employees with park network access, weather records from 1935 - 2004 for CAVE have been organized into a handy series of spreadsheets on the P drive. The Weather Records folder on the P drive contains a Microsoft Excel file with a wealth of information on the temperature and precipitation patterns in the park that were recorded at the Bat Draw Weather Station in the park over the last 69+ years. Monthly average high and average low temperature and precipitation records, yearly precipitation totals, and record high and record low temperature records are all included in the spreadsheets. But wait, that's not all! You can also have access to colorful graphs and information packed tables that were designed using the temperature and precipitation data. Be sure to check out the "Records" table that contains information on temperature and precipitation records that were set in the park, and the precipitation graph that displays the yearly rainfall totals in the park since 1935. The Weather Records Excel file is a work in progress and will continue to be populated with data recorded at the park's weather station on a daily and monthly basis.

Now you can impress your next audience of visitors with fun and amazing facts about the climate at Carlsbad Caverns National Park. All the information is at your fingertips, ready to be used in your next presentation or research endeavor. Any questions or suggestions about the weather records spreadsheets/workbook can be directed to Kelly Fuhrmann in the Biology office.

## INVERTEBRATE NEWS

by Renée West

### HORDES OF FALSE CHINCH BUGS SPARK OFFICE CURIOSITY

Resources staffers have spent a fair bit of time in early June wondering at the sudden multitudes of tiny insects crawling up the north outside walls of our offices. These insects are small enough to enter the buildings through closed doors and windows, and soon there were hundreds of them inside the offices. But they weren't biting anybody or going after our food or water – mostly they just seemed to be mating. Then there were even tinier insects crawling in the same areas. Soon our county extension agent Woods Houghton ran a column in the local newspaper about false chinch bugs and how they always have a big year when the non-native mustards are prominent, like this year. The tiny *Nysius raphanus* are named

after their favorite foods: *Raphanus* is the genus name of radish, a member of the mustard family. The false chinch bugs live on sap that they suck from plants, and when their beloved mustards dry up, they go to other plants. And watch out: they have up to five generations a year! Short of recommendations to spray malathion or sevin around the building, good regular vacuuming and replacing the bag should keep our offices fairly clear. (Lizards help, too. Our resident lizard on the north wall is looking very fat this month.) One cooperative extension website recommends preventing future problems by taking care of weeds in January and February.



A false chinch bug, *Nysius raphanus*, magnified greatly. (Picture borrowed from University of California Davis IPM website.)

#### FROG FRUIT NECTAR AVAILABLE EARLY THIS YEAR

Like many other native plants this year, the frog fruit (*Phyla lanceolata*) at the Resources offices is flowering very early. There are still large numbers and a variety of insects able to

feed on its nectar despite the timing, although there aren't many of the solitary wasps yet. This year's unusual and abundant spring rains seem to have caused many native plants to speed up and increase their blooming. Some even flowered at two different times. In recent years, the frog fruit has flowered much later – in late summer through fall (see *C&C* issue No. 26, Autumn 2002: Frog fruit provides important fall food for wildlife). But no matter when it comes out, there are always plenty of species ready to harvest *Phyla* nectar.

#### BEEES RETURN FOR SCC DRINKS OF DRIPS

Again this year we have had reports of bees flying in and out of the gate at Slaughter Canyon Cave. The bees are not traveling in swarms, but are merely individuals going for a drink of the drips in the cave. This is perfectly normal, and shouldn't be a concern for visitors or rangers. (As always: It's not a good idea to antagonize or swat at bees; people who know they're allergic to stings should take normal precautions.) Water in the desert will always attract wildlife. If there wasn't a gate at the entrance, we would probably have larger wildlife also using the water.

Look for Issues of *Canyons & Caves* at the following websites: <http://www.nps.gov/cave/pub-pdf.htm> Thanks to Kelly Thomas and Bridget Eisfeldt all issues can be downloaded as a PDF file from the park website. <http://www.caver.net/> Once there, go to the Canyons & Caves icon. Bill Bentley has placed all issues on his personal website and can also be downloaded as PDF files.

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